## COLLOIDAL NANOSYSTEMS FROM NATURAL AND RENEWABLE RESOURCES

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In the context of ours research projects aimed at evaluating biodegradable amphiphilic polymers of natural origin and from renewable resources, we designed nanomicelle systems based on Inulin (INU) and Vitamin E (VITE), denoted as INVITE, in order to combine specific behaviors of the natural fructan-type polysaccharide Inulin and the antioxidant activity of Vitamin E for specific delivery of drugs. In particular, we selected INU as the main component because it is a natural polysaccharide extracted from many plants, hydrophilic, cheap, FDA-approved and routinely used by intravenous injection and it has been used for pharmaceutical applications in different forms such as hydrogels, micelles, nanoparticles (1). VITE is is one of the most powerful anti-oxidant that nature uses in its cycles, and in the human body is involved in several processes including cancer and oxidative stress. INVITE conjugate, obtained by the combination of INU and VITE, is able to self-assemble in nanosized (<  $20 \pm 0.9$  nm) micelles (Fig.1). Moreover, by considering the physical-chemical and biological characteristics of INVITE micelles and their derivatives, they could be proposed for passive targeting to the kidneys (1), such as carrier of lipophilic drug for i.v. administration (2) and for subsequent site-specific drug release (3).



Fig. 1. SEM picture of INVITE micelles.

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